

Serial No. 09/353,906
Attorney Docket No.: 120/008

CLAIMS

1. A method of generating a new audio segment for an audio signal, the audio signal having a plurality of audio segments, the method comprising:

determining that a given audio segment is not ascertainable, the location of the given audio segment within the audio signal being ascertainable;

locating a set of consecutive audio segments in the audio signal, the set of consecutive audio segments preceding the given audio segment and having a formant;

removing the formant from the set of audio segments to produce a set of residue segments having a pitch;

processing the pitch and the set of residue segments to produce a new set of residue segments; and

adding the formant of the consecutive set of audio segments to the new set of residue segments to produce an output audio segment.

2. The method as defined by claim 1 wherein the given audio segment is missing from the plurality of audio segments.

3. The method as defined by claim 1 wherein the audio signal is a voice signal transmitted across a packet based network, the audio signal being a stream of data packets.

4. The method as defined by claim 1 further comprising:
determining the pitch of the set of residue segments.

5. The method as defined by claim 1 wherein the formant is removed by utilizing linear predictive coding filtering techniques.

6. The method as defined by claim 1 wherein the pitch and set of residue segments are processed by utilizing linear predictive coding filtering techniques.

7. The method as defined by claim 1 wherein the formant is a function having a variable value across the set of audio segments.

Serial No. 09/353,906
Attorney Docket No.: 120/008

8. The method as defined by claim 1 further comprising:
applying overlap-add operations to the output audio segment to produce an overlap audio segment.
9. The method as defined by claim 8 further comprising:
scaling the overlap audio segment to produce a scaled audio segment, the scaled audio segment being the new audio segment.
10. The method as defined by claim 1 further comprising:
adding the output audio segment to the audio signal in place of the given audio segment.
11. A computer program product for use on a computer system for generating a new audio segment for an audio signal, the audio signal having a plurality of audio segments, the computer program product comprising a computer usable medium having computer readable program code thereon, the computer readable program code including:
program code for determining that a given audio segment is not ascertainable, the location of the given audio segment within the audio signal being ascertainable;
program code for locating a set of consecutive audio segments in the audio signal, the set of consecutive audio segments preceding the given audio segment and having a formant;
program code for removing the formant from the set of audio segments to produce a set of residue segments having a pitch;
program code for processing the pitch and the set of residue segments to produce a new set of residue segments; and
program code for adding the formant of the consecutive set of audio segments to the new set of residue segments to produce an output audio segment.
12. The computer program product as defined by claim 11 wherein the given audio segment is missing from the plurality of audio segments.
13. The computer program product as defined by claim 11 wherein the audio signal is a voice signal transmitted across a packet based network, the audio signal being a stream of data packets.
14. The computer program product as defined by claim 11 further comprising:
program code for determining the pitch of the set of residue segments.

Serial No. 09/353,906
Attorney Docket No.: 120/008

15. The computer program product as defined by claim 11 wherein the program code for removing the formant comprises program code for utilizing linear predictive coding filtering techniques.

16. The computer program product as defined by claim 11 wherein the program code for processing includes program code for utilizing linear predictive coding filtering techniques.

17. The computer program product as defined by claim 11 wherein the formant is a function having a variable value across the set of audio segments.

18. The computer program product as defined by claim 11 further comprising:
program code for applying overlap-add operations to the output audio segment to produce an overlap audio segment.

19. The computer program product as defined by claim 18 further comprising:
program code for scaling the overlap audio segment to produce a scaled audio segment, the scaled audio segment being the new audio segment.

20. The computer program product as defined by claim 11 further comprising:
program code for adding the output audio segment to the audio signal in place of the given audio segment.

21. An apparatus for generating a new audio segment for an audio signal, the audio signal having a plurality of audio segments, the apparatus comprising:
a detector for determining that a given audio segment is not ascertainable, the location of the given audio segment within the audio signal being ascertainable;
an input to receive a set of consecutive audio segments, the set of consecutive audio segments preceding the given audio segment;
a filter operatively coupled with the input, the filter removing the formant from the set of consecutive audio segments to produce a set of residue segments having a pitch;
a pitch detector operatively coupled with the filter, the pitch detector calculating the pitch of the set of residue segments;
an estimator operatively coupled with the pitch detector, the estimator producing a new set of residue segments based upon the set of residue segments and the calculated pitch; and

Serial No. 09/353,906
Attorney Docket No.:

120/008

an inverse filter operatively coupled with the estimator, the inverse filter adding the formant of the consecutive set of audio segments to the new set of residue segments to produce an output audio segment.

22. The apparatus as defined by claim 21 further comprising:
an analyzer operatively coupled with the input, the analyzer calculating formant values for generating the filter.
23. The apparatus as defined by claim 21 further wherein the given audio segment is missing from the plurality of audio segments.
24. The apparatus as defined by claim 21 wherein the audio signal is a voice signal transmitted across a packet based network, the audio signal being a stream of data packets.
25. The apparatus as defined by claim 21 wherein the filter utilizes linear predictive coding filtering techniques.
26. The apparatus as defined by claim 21 wherein inverse filter utilizes linear predictive coding filtering techniques.
27. The apparatus as defined by claim 21 wherein the formant is a function having a variable value across the set of audio segments.
28. The apparatus as defined by claim 21 further comprising:
an overlap add module that applies overlap-add operations to the output audio segment to produce an overlap audio segment.
29. The apparatus as defined by claim 28 further comprising:
a scaler operatively coupled with the overlap add module, the scaler scaling the overlap audio segment to produce a scaled audio segment, the scaled audio segment being the new audio segment.
30. The apparatus as defined by claim 21 further comprising:
an adder that adds the output audio segment to the audio signal in place of the given audio segment.

Serial No. 09/353,906
Attorney Docket No.: 120/008

31. The apparatus as defined by claim 21 wherein the set of consecutive audio segments immediately precede the given audio segment.